Appendix B Clean version of Amended pages

A Surface-Coated Hard Material, Production Method for This, and Use of the Same

FIELD AND BACKGROUND OF THE INVENTION

[001] The present invention relates to a surface-coated hard [mechanically resistant] material as defined generically in Claim 1, a production method for this as defined in Claim 12, and use of the same as defined in Claim 19.

[002] It is known that coats of lacquer applied to flooring laminates, genuine wood laminates, parquet, furniture, or to wood or plastic panels in general can have resin added to them in order to make them resistant to wear. When this is done, lacquer systems based on phenol, melamine, aldehyde, formaldehyde, urea, epoxy, polyester and/or polyurethane resins are used. Preferred lacquer systems are the melamine resins. Because of its hardness, transparency, inertness, and availability, aluminum oxide or alumina products in the form of fused corundum, sintered corundum, monocrystalline corundum and/or calcined or sintered alumina such as plate-like alumina are preferred for increasing the wear-resistance of the coatings.

[003] EP 0 732 449 Al discloses a method for producing wear-resistant laminates, in which the surface of the resin-impregnated paper that is used during the production process is coated with a mixture consisting of melamine resin, cellulose fibers, corundum as the hard material, additives and water, and is dried to a specific residual moisture content. The resin-impregnated paper

these hard material particles thereby causing patches that cannot be removed from the laminate or lacquer surface. Attempts that have been made to avoid this effect by using low-viscosity lacquer systems that cover the whole of the granular material surface have been unsuccessful, since a minimum degree of viscosity is needed in order to achieve the desired thickness of the lacquer coating.

[006] A further disadvantage of the markedly fissured surfaces of the hard granular material that cannot be completely wetted with lacquer is the fact that light is scattered diffusely on the above-discussed micro-edges, cracks, and edged displacements so that the transparency of the lacquer coating that is filled with aluminum oxide is degraded. However, a high degree of transparency is one of the most important criteria for these coatings, which are frequently used in applications in which the visual effect plays a major role. In addition to this, small air bubbles can accumulate on these micro-edges and cracks, and this causes an additional defuse scattering of the light, with the result that transparency is still further degraded.

[007] Thus, it is the objective of the present invention to describe granular hard material that does not suffer from the disadvantages described heretofore.

SUMMARY OF THE INVENTION

[008] This objective has been achieved with a hard material having the features described in Claim 1, by a method for the production of

[017] One possible explanation for this surprising effect maybe the good gliding quality and lubricating quality of the polysiloxane. The wear test itself is nothing more than a lubricant such as oil when grinding is a generally known technique that is used in order to reduce the coefficient of friction between the material and the grinding agent and thus reduce the aggressiveness of the grinding agent. In the present case it is possible that the effect of the grinding paper is reduced and wear on the lacquer or laminate layer is also reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[018] FIGS. 1-4 are photomicrographs of surfaces of untreated hard grain (FIG. 1, 3000x), treated hard grain per the present invention (FIG. 2,3000x), surface of a lacquer coating with untreated hard grains (FIG. 3); and surface of a lacquer coating with hard grains coated via the process of the invention (FIG. 4).

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[019] The present invention will be described in greater detail below on the basis of embodiments without necessarily being restricted to these.

[020] Examples 1 - 5

[021] 1 kg pure white corundum (Alodur@ WSK, Treibacher Schleifmittel), F 280 granulation, was tempered at 4000C and then sprayed with a diluted, aqueous polysiloxane emulsion (Baysilone® oil emulsion H, Bayer Leverkusen) when in a drum mixer, after which it was mixed intensively for 20 minutes. The coated granular material was then dried for 20 minutes at 1200C in a convection oven. Subsequently, the total content Of Si02 and the proportion of polysiloxane on the surface of the grains was determined.

[023] Figure 1 shows the untreated granular material (Example 6) with a very finely structured and fissured surface. In comparison to this, Figure 2 shows the grain surface (Example 4), which is completely covered by the coating according to the present invention. The cracks are closed and have been filled to a large extent. The edges are rounded, and no more edge displacements can be seen. Figures 3 and 4 in the Appendix serve to document the effect of the coating according to the present invention on the transparency of a lacquer coating. Whereas the uncoated grains (Example 6) can be clearly seen in the lacquer coating, and a relatively large number of intracrystalline optical refractive edges can be seen, the hard grains coated according to the present invention, shown in [Illustration] Figure 4, can only be identified poorly by the grain resin boundary. There are absolutely no intra-crystalline visual refractive edges to be seen.

[024] Table 2 sets out the IP wear values as determined by Draft Standard prEN 13329:1998, Appendix F.

Example	IP Average value from three test bodies	wear resistance compared to untreated grain
1	2200	105%
2	2200	105%
3	2300	1090-.
4	2500	119%
5	2500	119%
6*	2100	100%

[025] Table 2: Wear values